

Kindly insert the following Abstract of the Disclosure after the last page of the claims. The Abstract of the Disclosure is also set forth on a separate sheet at the end of this Preliminary Amendment.

ABSTRACT OF THE DISCLOSURE

Method and sensor arrangement for determining a contact force vector acting on a rolling element bearing in operation. Sensor signals are received from a plurality of sensors measuring performance characteristics of the rolling element bearing. The received sensor signals are processed to determine the contact force vector. The plurality of sensors are arranged to measure a bearing component deformation, and the step of processing comprises the step of determining the contact force vector using an inverse transformation of a finite element analysis model which describes the rolling element bearing. The finite element analysis model is simplified using at least one generalized mode shape, the at least one generalized mode shape being a mathematical description of a natural mode deformation of a component of the rolling element bearing, such as the inner or outer ring.